Abstract of the Disclosure

The present invention provides for adaptive filters that have improved computational and memory bandwidth proprieties. When applied to telecommunication applications, the present invention additionally provides for improved methods and systems of canceling echoes. In one embodiment of the adaptive filter of the present invention, a filter, preferably an adaptive finite impulse response (FIR) filter, of an appropriate length, N, is chosen. Once the filter is chosen, convergence is achieved and the filter is converted to an infinite impulse response (IIR) filter. In the course of operation, data is received from an input source and used to adapt the zeroes of the IIR filter using the least means square (LMS) approach, keeping the poles fixed. The adaptation process generates a set of converged filter coefficients that are then applied to the input signal to create a modified signal used to filter the data. The novel adaptive filter method and system presented herein can be used to improve the calculation of the echo impulse response by, among other things, reducing the computational complexity and memory requirements of the coefficient calculation conducted within the adaptive filter.